



**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application No.: 10/650,208

Filing Date: August 28, 2003

Applicants: Andrew W. Phillips, et al.

Group Art Unit: 3683

Examiner: NGUYEN, XUAN LAN T

Title: THERMAL SIMULATION FRICTION DEVICE COOLING  
CONTROL

Attorney Docket: GP-302782

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**REPLY BRIEF TO EXAMINER'S ANSWER**

This reply brief is a reply to the Examiner's Answer mailed April 3, 2007, in the appeal from the decision of the Patent Examiner dated June 9, 2006, rejecting claims 1, 3-10, and 12-26.

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PTO/SB/21 (04-07)

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First Named Inventor

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Xuan Lan T. Nguyen

Attorney Docket Number

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Signature



Printed name

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Date

June 4, 2007

Reg. No.

34,754

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### **STATUS OF THE CLAIMS**

Claims 1, 3-10, and 12-26 are the claims on Appeal. Each of these claims is currently pending in the Application. Claims 2, 11, and 27-29 have been cancelled.

### **STATUS OF AMENDMENTS AFTER FINAL**

The Amendments After Final, which were filed on August 1, 2006 and November 7, 2006, have not been entered.

### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Appellant seeks the Board's review of the rejection of claims 1, 3-10, and 12-26 under 35 U.S.C. § 102(b) as being anticipated by Lentz, et al. (U.S. Pat. No. 5,216,606, hereinafter "Lentz").

Appellant also seeks the Board's review of the rejection of claims 1, 3-10, and 12-26 under 35 U.S.C. § 102(e) as being anticipated by Buchanan, et al. (U.S. Pat. No. 6,715,597, hereinafter "Buchanan").

## ARGUMENTS

### **102(B) REJECTION: LENTZ**

Further to Appellants' Amended Appeal Brief filed on January 5, 2007, Appellant makes the following arguments. Claim 1 recites a cooling system for cooling a friction device. Lentz, by contrast, discloses a system for accurately predicting the amount of time required to actuate a friction device. In Lentz, a pump 82 driven at engine speed (col. 3 lines 33-34) provides hydraulic fluid to a series of solenoid operated control valves 30, 32, 34, 36, 38, and 40, each of which controls a transmission clutch TCC, C1, C2, C3, C4, and C5 (col. 2, lines 60-62).

Lentz predicts the amount of time needed to fill a piston-containing "**clutch cavity** with oil. During the fill period the **clutch piston** strokes and the clutch plates compress" (col. 4, lines 44-46). This description is referenced in the Abstract, as cited by the Examiner, with the language: "fluid retained in a clutch cavity." The Examiner's assertion that the clutch cavity encloses the friction surfaces is refuted by the explicit description that the clutch piston is actuated by the fluid in the clutch cavity. There is no reference in Lentz to a cavity that bathes the friction surfaces in hydraulic fluid, and specifically no reference to cooling the friction surfaces.

Lentz instead discloses how to accurately predict how long it will take to fill the piston-containing cavity so that the filling process can be started at the right time. Various factors are considered, such as the **viscosity** of the fluid (**a function of the fluid's temperature** and chemical properties), the speed of the pump, the size of the cavity, and how much unexhausted fluid is already in the cavity.

While Lentz does disclose a flow control device (e.g., solenoid operated control valve 32), there is no teaching or suggestion that the control valve controls a flow of **cooling fluid through** the friction device, as recited by claim 1. Instead, Lentz controls a flow of **actuating fluid into** a piston-actuating cavity.

Further, Lentz does not disclose estimating a temperature state **of the friction device**. Instead, Lentz measures the temperature of the hydraulic fluid to determine viscosity and to therefore predict how long it will take to fill a piston-containing cavity with fluid. Even if Lentz estimated a temperature state, Lentz does not teach or suggest **estimating a heat rate** of the friction device on which to base the temperature state. Finally, Lentz does not disclose operating the flow control device based on a flow command, which is **based on the temperature state**. Instead, Lentz operates a solenoid-actuating flow control device **based on the predicted fill time**.

#### **102(E) REJECTION: BUCHANAN**

Appellants rely on the arguments of patentability of the present application over Buchanan as set forth in the Amended Appeal Brief filed on January 5, 2007.

#### **CLAIMS 3-10 AND 12-26**

Independent claims 10 and 20 are allowable for at least similar reasons as independent claim 1. Dependent claims 2-9, 12-19, and 21-26 ultimately depend from independent claims 1, 10, and 20, and are thus allowable for at least similar reasons.


**CONCLUSION**

Appellants respectfully submit that the prior art does not teach or suggest one or more limitations of the claims as discussed above.

Should there be any outstanding matters that need to be resolved in the present Application, the Examiner is respectfully requested to contact the undersigned at the telephone number of the undersigned below.

Respectfully submitted,

Dated: June 4, 2007

By:   
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